



SIKA AT WORK

NIPPON GOLD

SIKA AT THE HISHIKARI GOLD MINE IN JAPAN

BUILDING TRUST



HISHIKARI GOLD MINE, JAPAN

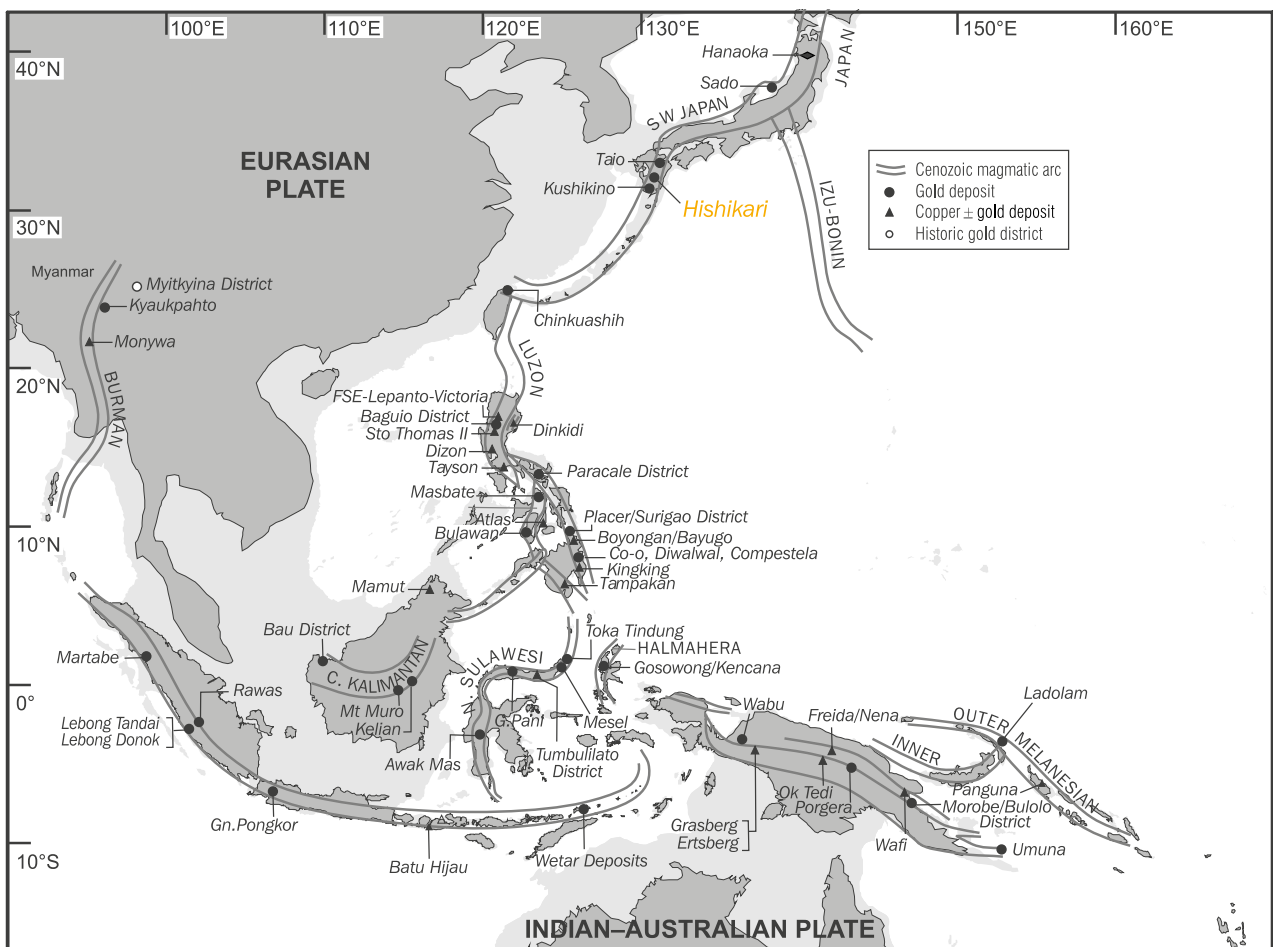
PROJECT DESCRIPTION

The Hishikari gold-silver deposit is located in the northeastern Kagoshima prefecture of the southern Japanese Island Kyushu, about 60 km north of Kagoshima City, Japan. The deposit was discovered by the Metal Mining Agency of Japan in 1981 with subsequent development and mining taking place through Sumitomo Metal Mining Company. Hishikari has proven to be a world class deposit in terms of the contained gold grades and quality of the ore bodies. The Hishikari mine consists mainly of three major ore lenses, called Honzan, Yamada and Sanjin. These ore bodies contain very high gold grades in the order of 30 - 40 grams per ton of ore which makes the Hishikari operation one of the highest grade gold mines globally. The relatively young geological age of mineralization of just around 1 million years is strongly related to the still active volcanic activity in the area. Hishikari, located along the circum-pacific ring of fire is just one among many world class, gold-copper deposits of epithermal nature that make this part of the world among the richest mineral endowments globally.

Sika supplies a large number of mines within the region, implementing best underground fortification practices and technologies for a range of high profile mining projects.

EFFICIENT UNDERGROUND DEVELOPMENT WITH SIKA

The Hishikari mineralization consists of high grade Quartz-Calcite-Adular veins that contain the majority of the gold. These veins are structurally well defined and relatively narrow and selective stoping methods are used to enable ore extraction with a minimum amount of dilution. The Hishikari team has been a long standing partner of Sika Japan and among the first clients in Japan that utilised high performing, liquid, alkaline free shotcrete accelerators for their primary shotcrete support. High early strength development of the shotcrete which is applied using a dense-flow process and a lean material handling as well as logistical aspects were key parameter when evaluating different options for the applied shotcrete.



2

PROJECT REQUIREMENTS

The major specifications for the sprayed concrete are to achieve a rapid early strength development of 2N/mm² or 2 MPa after 2 hours. This rapid strength development allows for short re-entry times and subsequent bolting and hence short mine cycles. Summarized, the Hishikari requirements for the shotcrete are as follows:

- Rapid early strength development
- High final strength
- Minimum consumption of shotcrete accelerator to achieve the required early strength
- A product stability of minimum six months

SIKA SOLUTION

After extensive shotcrete trials and performance tests, the Sumitomo Hishikari team decided to go for the proven Sika® Sigunit® L53 AF shotcrete accelerator type in combination with Sikament-1100 NT high range water reducing admixture. The Sigunit® L53 AF is a solution type based, alkaline free accelerator and in order to have the product on site when there is demand for it, the customer decided to install an on site blending facility to produce the Sigunit® when needed. Sigunit® P10 AF is blended underground in order to produce a liquid accelerator that is loaded on the spray rig for subsequent shotcrete application.

This unique Sika set-up has proven to be an excellent solution globally, especially for projects that are difficult to access, have long supply routes or are located in challenging climatic locations where supply of liquid based chemicals is a challenge. On site blending has also show to reduce the amount of waste from chemicals passing their shelf life. Sika Japan is proud to partner with this world class mining project.

PROJECT PARTICIPANTS

Owner: Sumitomo Metal Mining Japan
Sika Organization: Sika Japan

- 1 Front: Shotcreting underground at the Hishikari Gold Mine
- 2 Map over south-east Asia including the Japanese Islands and the Hishikari Gold deposit with other major ore deposits along the circum-pacific ring of fire (Hamilton et al. 1974)
- 3 Concrete batch plant at the Hishikari mine site
- 4 Sika® Sigunit® P-10 AF powder blending station to produce Sigunit® L53 AF
- 5 Finished Sigunit® L53 AF product after blending process
- 6 Underground Haulage LHD exiting the Hishikari ramp portal
- 7 Storage facility for Sigunit® P10 big bags
- 8 Overview Hishikari mines site, source: SMM



3



4



5

HISHIKARI GOLD MINE, JAPAN



Our most current General Sales Conditions shall apply. Please consult the most current local Product Data Sheet prior to any use.



SIKA SERVICES AG
Tueffenwies 16
CH-8048 Zurich
Switzerland

Contact
Phone +41 58 436 40 40
www.sika.com/mining

